Information Technology Investment and Strategic Planning in the Australian Utility Industry 1999

"Evaluation and management of information systems/technology investments."

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Information Technology Investment and Strategic Planning in the Australian Utility Industry 1999

Information systems/technology investments

1. Introduction

The focus on IT investment is put down to Steven Roach, a Chief economist for Morgan Stanley. He started alarms bells ringing ten years ago, when he determined the large mismatch between huge increases in computer power per white collar workers and the near-zero productivity gains for those workers. His paper "American Technology Dilemma", (cited in Young, 1999, p42), described how the productivity in the US service sector only increased 0.7 per cent even though $US862 billion IT investment during the 1970's and 80's.

Different views exist on whether the research was right or wrong or even still valid, but that fact is the belief is widely held that IT is expensive and very seldom delivers the promised benefits.

A research project was conducted in 1999 to determine the level of investment and the methods used to manage the investments in the Australian Utility Community. Large Information Technology (IT) investments have been made by Companies, Government (Local and State) within the in the last number of years.

The intent of the study was to identify perceived business benefits and the realisation of those benefits, by industry group and the comparison between groups is of particular interest. This could not be achieved as the type and diversity of the organisations who responded would not allow comparison in many areas.

Gartner reported (cited in Prodromou, 1999, p.26) the CIO's top 10 management of technology issues for 1999. The issues are depicted in Table 1, below.

Table 1: Gartner's CIO's Top 10 Management issues for 1999. (Cited in Prodromou, 1999 p. 26)

	Ranking (1 Highest)		
Technology Issue	**Australasia**	**US/ Canada**	**Study**
Solving year 2000 problems	1	3	√
IT and business strategic planning	2	1	√
Aligning IT and business goals	3	2	√
Reducing IT costs	4	7	√
Measuring IT/IS efficiency	5	5	√
Demonstrating business value of IT	6	8	√
Recruiting and retaining IT staff	7	7	
Reorganising IS	8		
Outsourcing	9		√
Building IS and business partnerships	10		
Utilising IT for competitive breakthroughs		6	√
Developing an IT architecture		9	
Improving project delivery		10	√

Control of IT investment to ensure value for money is currently an issue of major concern to most businesses. In today's increasingly competitive business climate, there is a growing requirement for stricter cost control and a demand for higher returns while minimising risk in all investments. Recognition of the potential impact of IT systems on the strategic position of companies and increasing levels of IT spent have made the control and justification of IT investment a critically important issue. At the same time there has been and still is widespread doubt concerning the suitability of traditional methods of investment appraisal for the evaluation of IT proposals.

This paper deals with IT and business strategic planning and the IT invesment.

2. Methodology

The methodology of the study was based on research, a questionnaire and analysis of the results.

The types of Utilities targeted for the research project can be summarised as follows:

- Electricity 20
- Gas 9
- Local Council 34
- Water 51
- Gas & Electricity 1
- Electricity & Water 1

34 Local Councils were included as they provide their communities with water and treat wastewater as part of their service.

Of the 117 questionnaires sent out, 44 were returned in a completed format. This represented 37% of total number sent out.

2.1 Respondent details

The 44 responses were collated and analysed. The majority of the responses were from IT managers. This is illustrated in Figure 1, below.

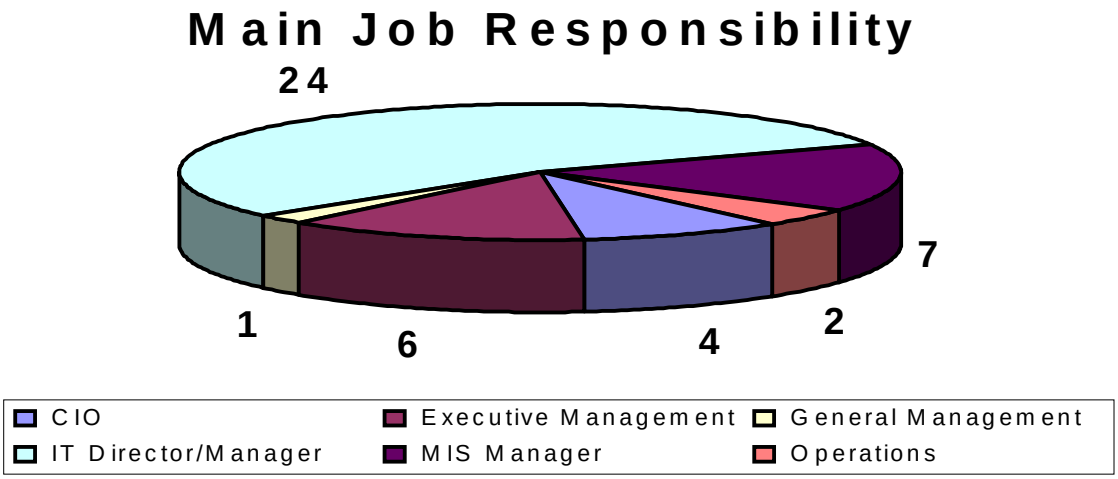

Figure 1: Main Job Responsibility

These people in general reported to either a Corporate Service Director, Chief Financial Officer or a General Manager. 7 of the responses reported directly to a Board or a Minister of the Government.

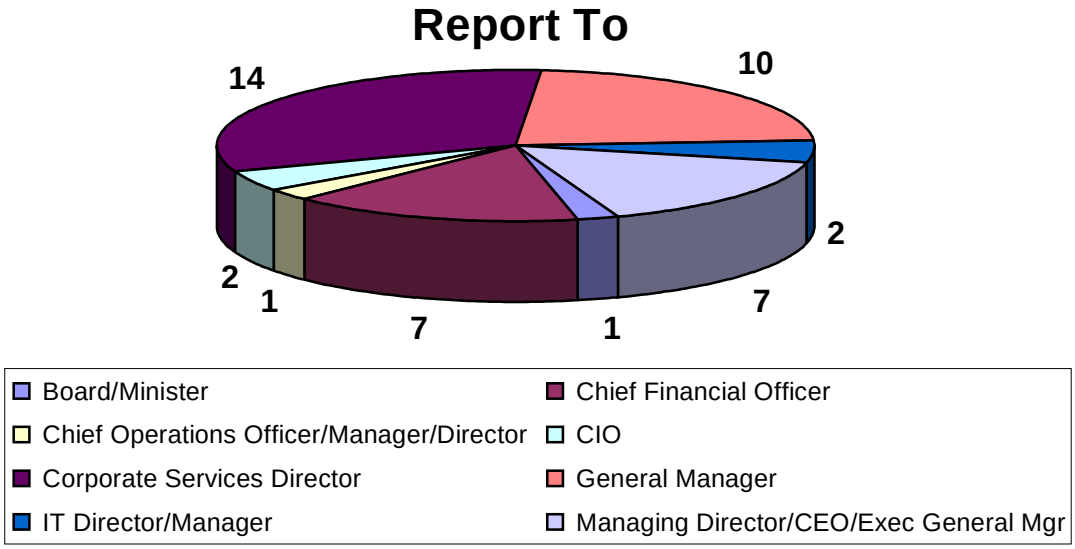

Figure 2: Survey Respondents Manager or direct report.

Four Chief Information Officer's (CIO) answered the questionnaire and two of the respondents reported to a Chief Information Officer (CIO) The role of the CIO is not prevalent in the utility industry and in general IT management does not appear to be considered very highly. It appears still to be a subservient position to the Financial Managers in most organisations.

This appears to go against national trends. International Market Assessment (IMA) produced a report "Making Your IT Investment Pay", (cited in IMA, 1998, p21), where their research indicated that over half of the most senior IT managers directly report to the CEO. They also discovered that given the increasing recognition of the importance of IT, in just over 20% of the companies they surveyed the most senior IT manager also sits on the board of the company.

2.2 Organisation details

To try and analyse the responses in some meaningful way, some form of data grouping was necessary.

The majority of the organisations surveyed had a turnover over $100M. Turnover in general did not appear to influence any particular area and it was decided to report the data based on this criteria.

2.3 Current IT Budget

It is important to understand the budget for each of the organisations that responded to the survey. Figure 3 illustrates the percentage of expenditure for each group. In the majority of cases, as turnover increases so did expenditure.

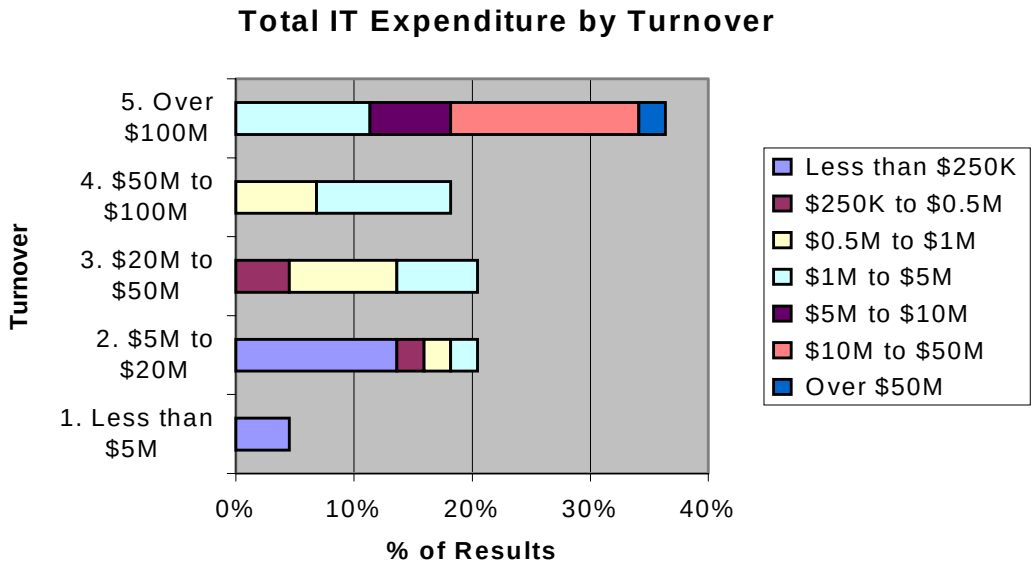

Figure 3: Total IT Expenditure by Turnover

Figure 4, indicates that the percentage increase in each budget over the different turnover groups.

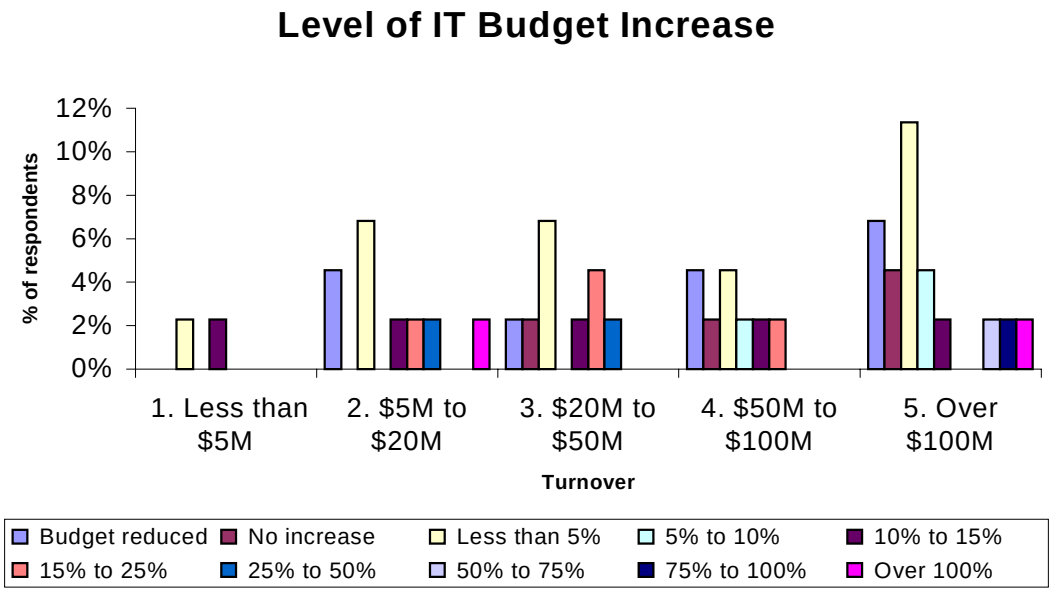

Figure 4: Level of IT Budget Increase

Eight of the respondent reported that their budget was reduced from the previous year's budget, four had no increase at all and fourteen had less than 5% increase. This represented 59% of the organisations surveyed. There was no significant increase in the IT budget.

When asked what the reason for the change most indicated that the change was meeting their Year 2000 (Y2K) compliance obligations (Figure 5). It would appear that most organisations had either completed their Year 2000 projects or were winding them up.

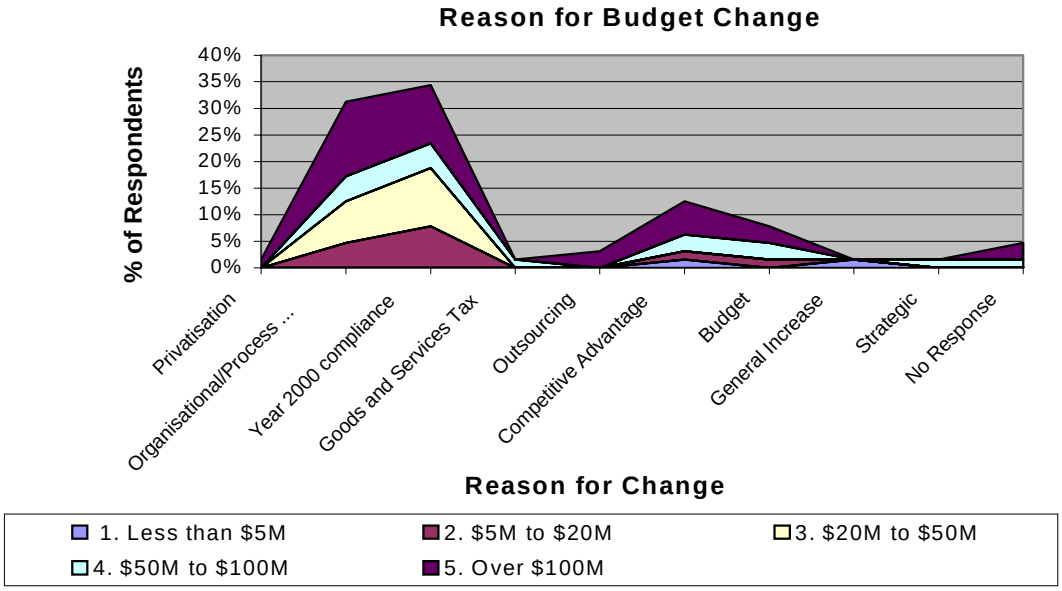

Figure 5: Reason for Change in IT Budget

3. External Services and Outsourcing

3.1 Why Outsource?

Utilities by the nature of their business typically provide similar products, be it water and the disposal of wastewater or energy (electricity and or gas). Whilst monopolies they didn't need to differentiate their product(s) as they were the only supplier. Due to the economic restructuring of the utility industries in the last number of years, they now need to differentiate, be it either on price or level of service.

In a competitive environment, business uses technology for the consumer to be able to differentiate between different suppliers or uses it to reduce costs.

Willcocks (1998) states that the general rise of IT outsourcing across developed economies in the 1990s was a response to cost pressures in a recession. It was an attempt to reduce the cost of future IT capital investment, and/or seen as an opportunity to improve the balance sheet and cash flow.

IT outsourcing has also been undertaken for technical reasons, such as to improve the IT service, give access to more different expertise and technologies and/or assist moves to distributed systems, downsizing or systems replacement.

Organisations have also used IT outsourcing to enable refocussing on the core business and/or on IT/IS strategy rather than service and operations. Wider business and organisational changes, such as merger or acquisition, business start up, restructuring and/or privatisation have also often accompanied IT outsourcing.

An IT activity/service can be defined as a differentiator or as a commodity. Activities that are differentiators provide a potential basis for competitive advantage.

For this reason many IT organisations now utilise external service providers but a distinction should be made between strategic and useful activities. Strategic activities are integral to the organisation’s achievement goals, and critical to its existing and future business direction. Organisations need to maintain control of these.

3.2 Types and Usage of External Services

Of the organisations surveyed, 7% did not use external service providers, while 13% used five or more. (Figure 6 refers). This represents that 93% of utilities use external service providers.

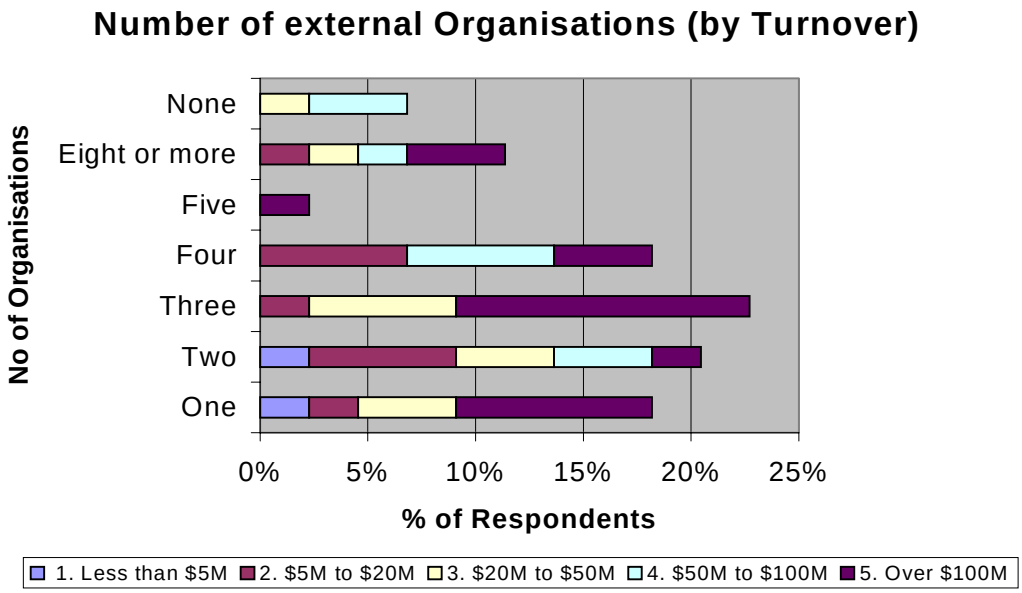

Figure 6: Number of External Organisations used by Turnover

The services provided by the external service providers are illustrated in Figure 7, below. Of interest is that only two organisations had all of their IT services completely outsourced. These organisations both had a turnover over $100M. The

The services that are outsourced, in order of their popularity are:

- Applications and System development 24
- Networks and Communication 19
- Application Support 15
- Facility Management 11
- Helpdesk 9
- New architecture 7
- End user support 5
- Bill Printing 1
- Project Office 1

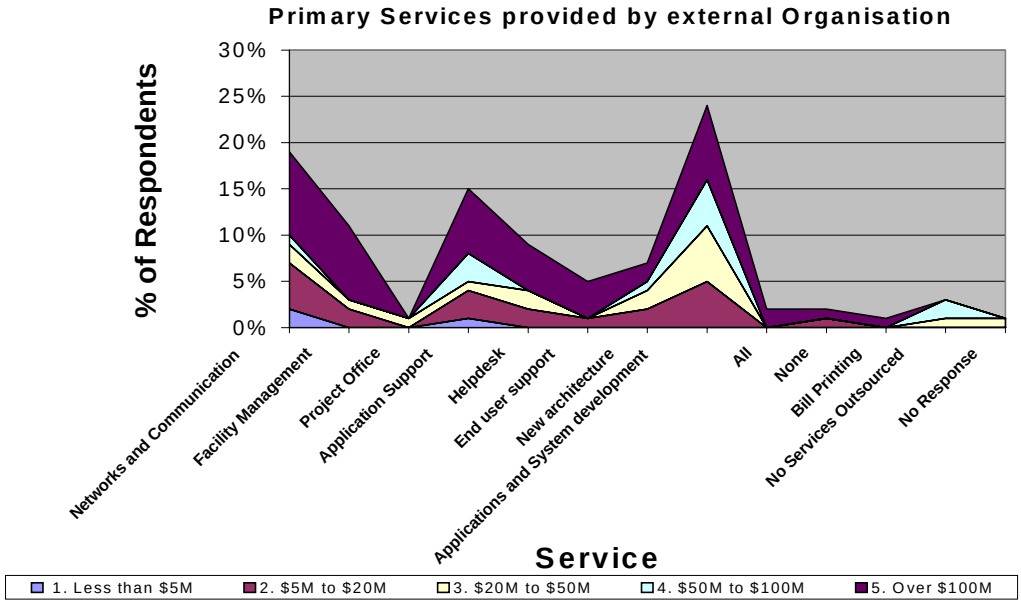

Figure 7: Primary Services Provided by External Organisations

Willcocks (1998) states that Applications and System development may be outsourced due to the skills required and associated risks.

Networks and Communication, Application Support, Facility Management and the associated helpdesk services are typical facility management outsourced services. This is evident in Figure 7, above.

3.2.1 Expenditure

No specific correlation can be determined when comparing the percentage of the budget spent on external services and the turnover of the organisation.

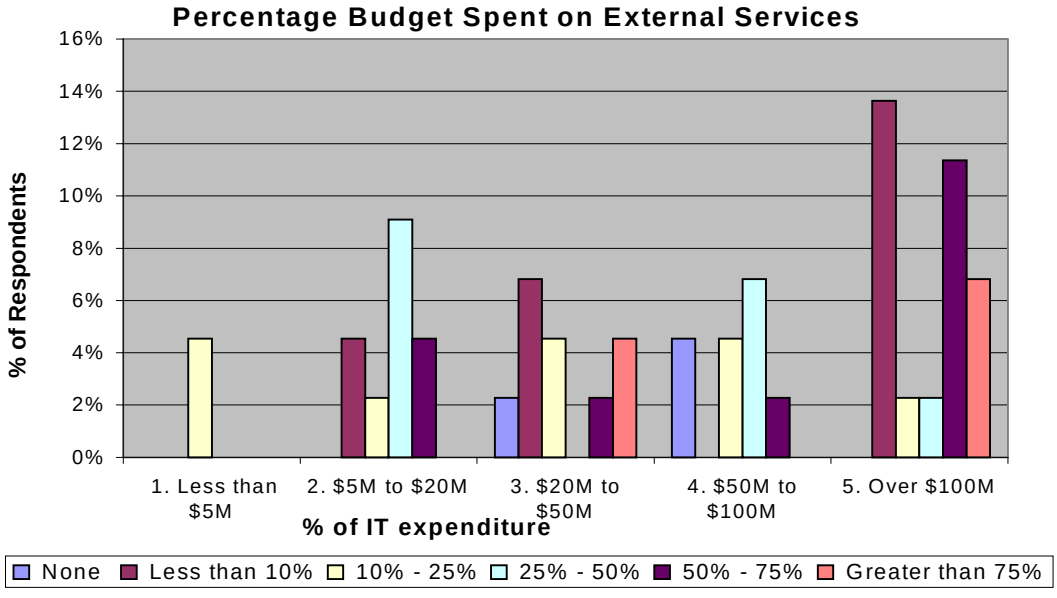

Figure 8: Percentage of IT Budget Spent on External Services

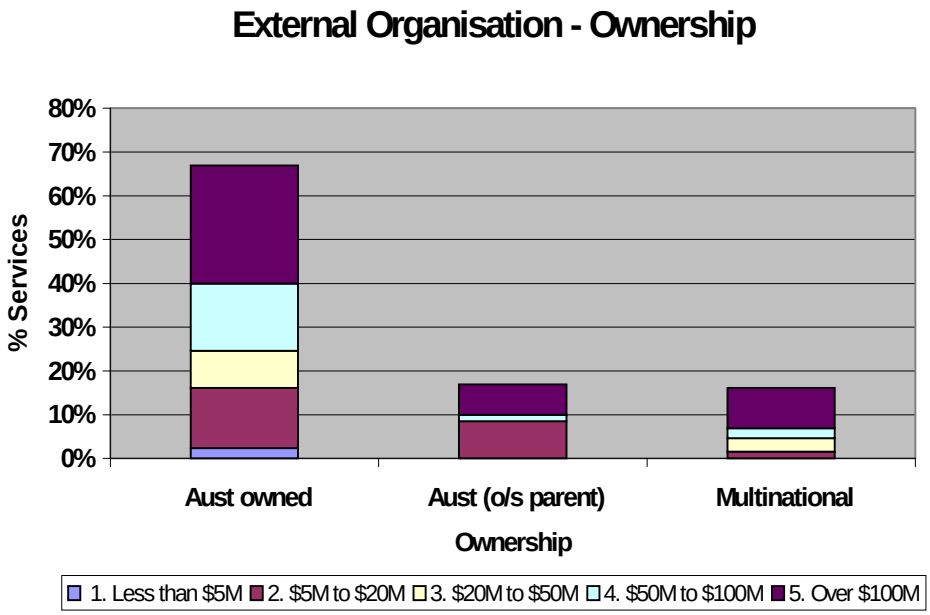

Figure 9: Ownership of External Organisations Used

34% of external services are provided by companies that are either Multinational or are registered in Australia but have an overseas parent. Figure 10, below, illustrates that for those organisations using external service providers Fee for Service is by far the most accepted way of paying for services rendered. Clearly performance based payments are only used in a small number of organisations with a turnover over $100M.

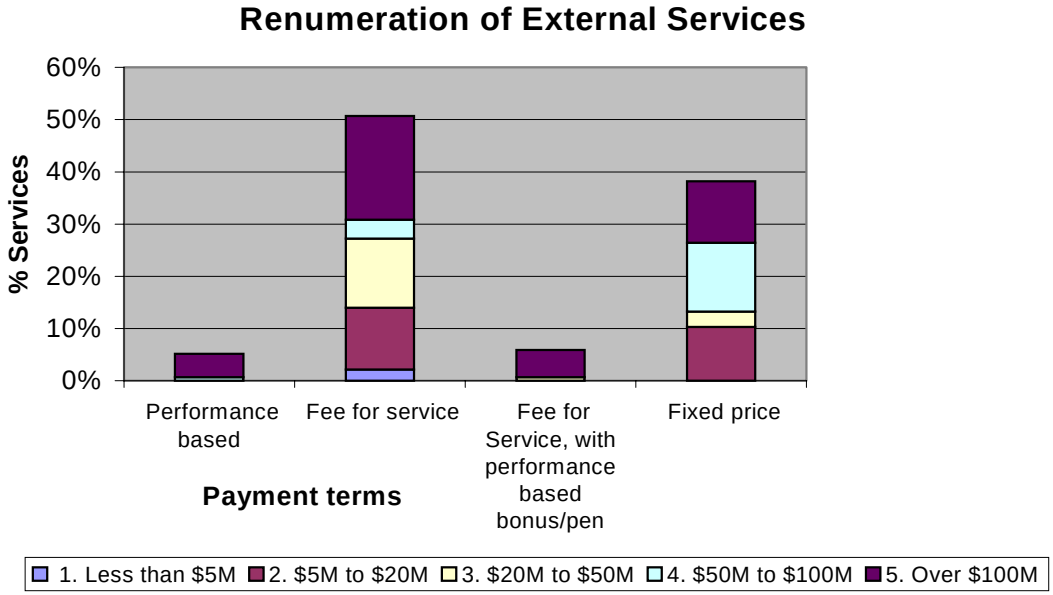

Figure 10: Types of Remuneration Provided for External Services

Comparing the Payment Terms with the Type of Ownership it is interesting to note that performance based payments are mainly entered into by Australian based or owned organisations. Figure 11 below refers.

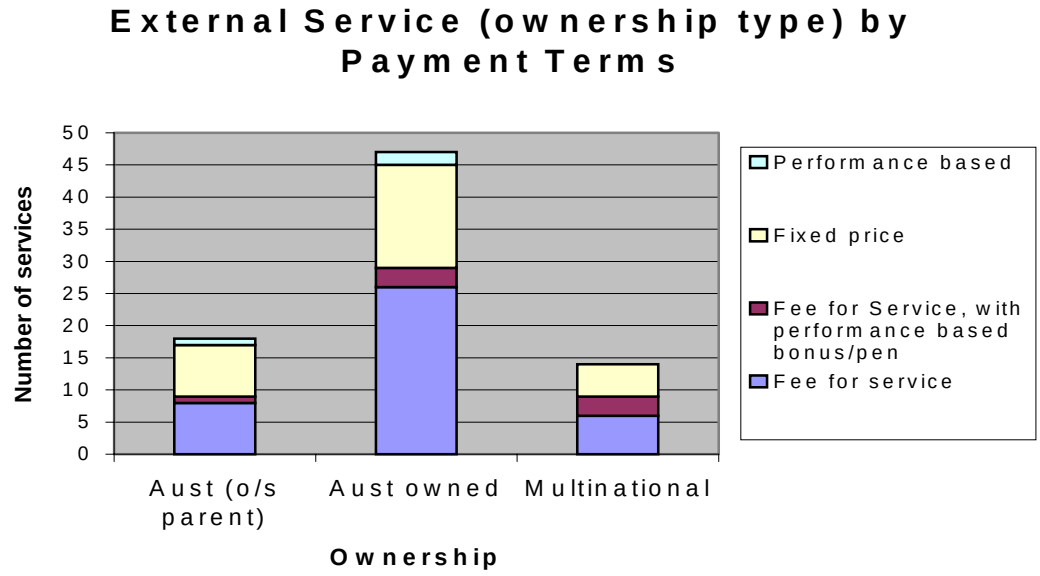

Figure 11: External Services ownership type and payment terms

Looking more closely at the relationship between the external service supplier and the client organisation it becomes apparent that most organisations see some form of involvement by their suppliers in their IT business, be it as an information provider or as a partner. This is illustrated in Figure 12, below.

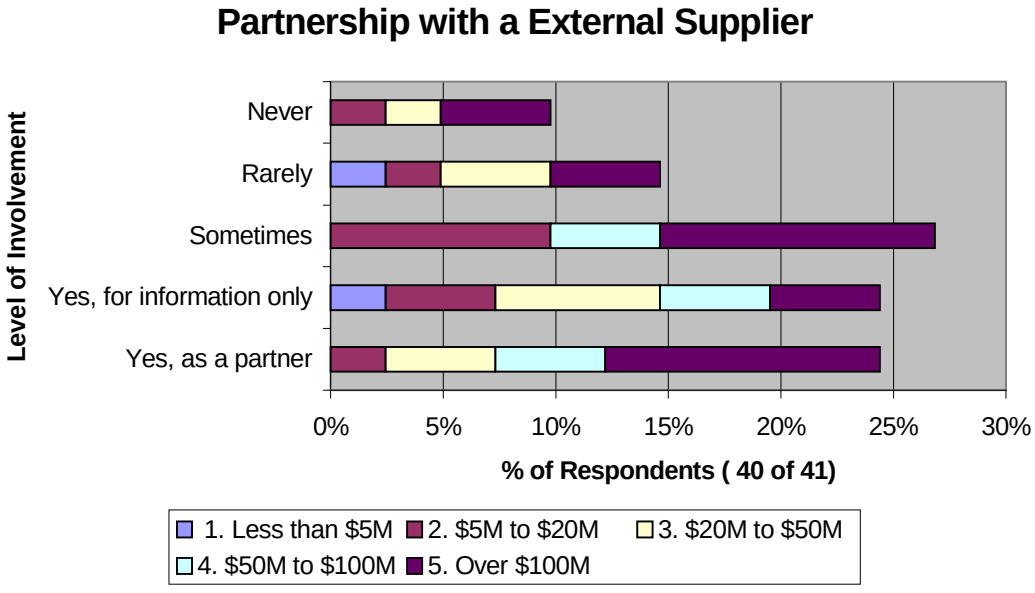

Figure 12: Partnership Arrangements with External Suppliers

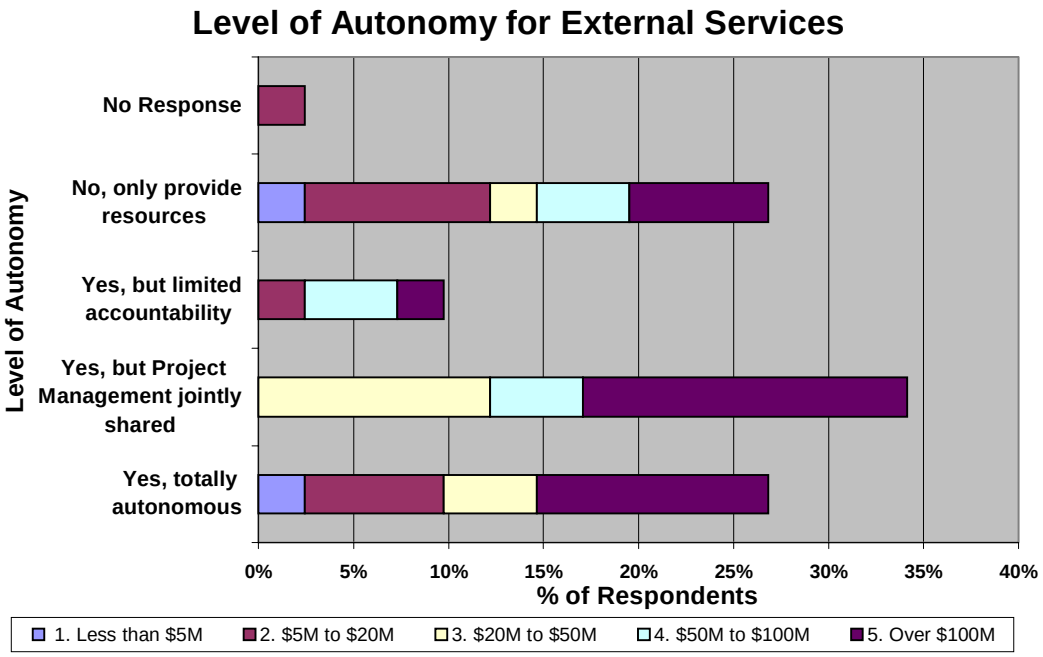

Figure 13: Autonomy Level of External Service Providers

Figure 13, above illustrates the level of autonomy given to suppliers by the respective organisations surveyed. When linked to the way the suppliers are paid, it is interesting to note that with performance based payments the majority of payment types are fee for service. Looking at the figures it appears that the organisations pay nearly 50% of their services as fixed price or performance based but only 25% of those organisations have totally autonomy. This is illustrated in Figure 14, below.

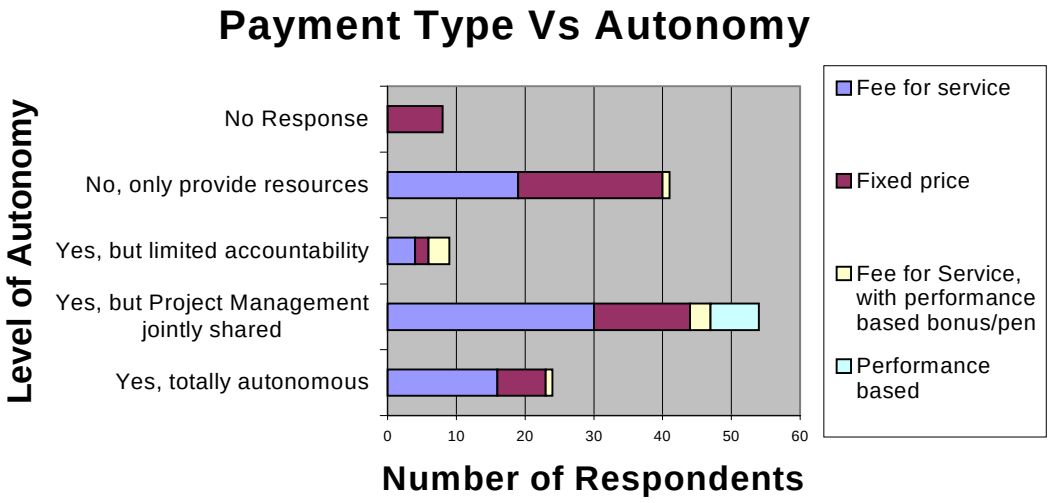

Figure 14: Payment type vs level of Autonomy

It appears that for the organisations surveyed, performance based payments are used when limited responsibility is also in place. No logical explanation appears evident.

When investigating the level of representation allowed it appears that in the main most external organisations are not permitted to represent their partnership organisation. Figure 15 below refers. This does correspond to the previous data.

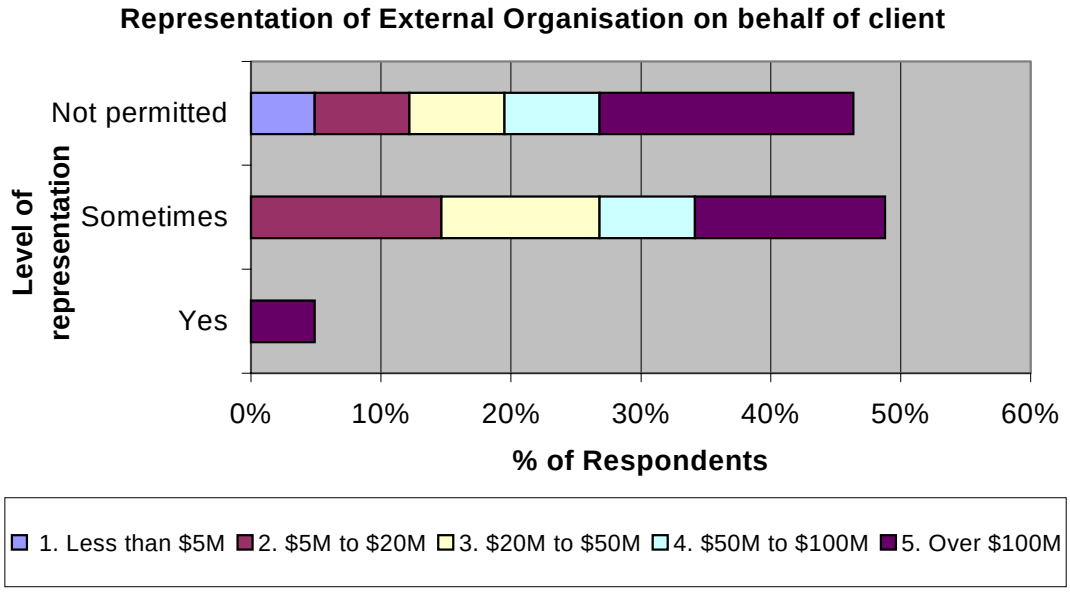

Figure 15: Level of Representation of External Suppliers on behalf of Client

Table 2, is extracted from DiRomulaldo and Guraxani 1998 article "Strategic Intent for IT outsourcing" and is of particular interest because it illustrates the relationship between the different components.

When comparing the information obtained from the above it does appear that the arrangements with external organisations closely correspond to making improvements in the Information System area. This deduction is based on the work published by DiRomulaldo and Guraxani (1998). The shaded area in Table 2 below indicates the links to the data obtained from the survey.

Table 2: Aspects of Outsourcing Contract (DiRomulaldo and Guraxani (1998))

	IS Improvement	**Business Impact**	**Commercial Exploitation**
Contract Type	• Specialised Contracts • Standard Contracts	• Strategic Alliances • Preferred Supplier	• Equity Ownership • Joint Ventures
Payments and Incentives	• IS Performance-Based Bonus • Cost Plus • Fixed Fee	• Business Performance-Based Bonus • Shared Risk/Reward	• Shared Risk/Reward • Joint Equity and Ownership
Performance Measures	• IS Costs • IS Quality • IS Productivity	• Business Costs • Business Quality • Business	• Return on Assets • Revenue • Profit

	• IS User Satisfaction	Productivity • Business Customer Satisfaction	• Market Share
Pricing Provisions	• Market Futures • Cost Plus • Indexed • Fixed	• Share of Risk/Reward • Cost Plus Bonus • Cost Plus Fee • Fixed Cost	• Share of Risk/Reward • Cost Plus • Recovered Cost
Non-Price Contract Provisions	• Specified Purchase and Supply Obligations • Service-level Agreements	• Key People Provision • Competitive Issues • Preferred Supplier Clause	• Asset Ownership • Competitive Issues • Most Favoured Customer

4. IT Investment Influences

4.1 Competitive Advantage

Given the competitive reforms implemented in most parts of the country in the Utility Industry it was considered necessary to understand the change and the impact on IT. Many utilities were monopolies and have either been divided up and sold or now face some form of competition.

IT is seen as a competitive "tool" in most industries, but this does not appear to be the case in the Australian Utility Industry with 72% reporting that they spend less than 10% of their IT budgets being spent on Competitive Advantage. (Figure 16 refers)

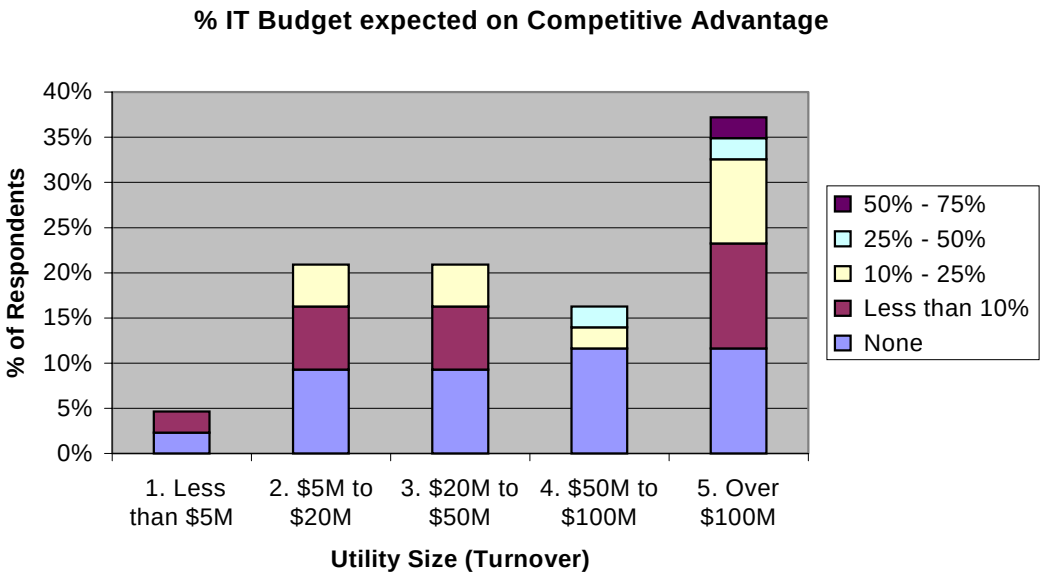

Figure 16: Percentage of IT Budget Expenditure Spent on Competitive Advantage

This was reinforced when the organisations were asked if Competitive Advantage was included as part of the criteria when implementing Y2K solutions? Less than 20% of the organisations reported that they had considered it. Refer Figure 17, below.

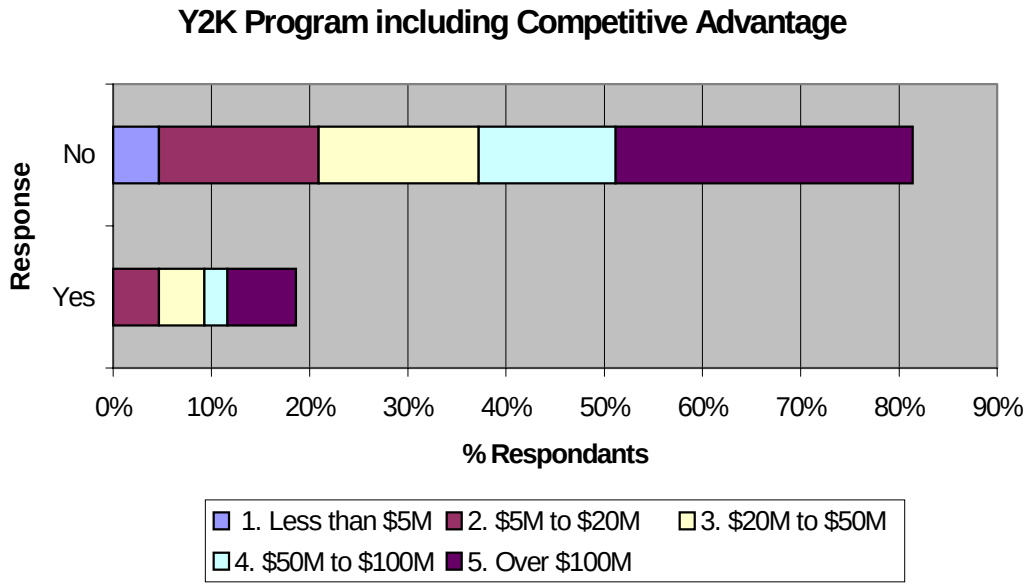

Figure 17: Y2K Program Including Competitive Advantage

4.2 Improving Customer Service

Given the competitive environment the next question to ask is "What percentage of the IT budget is spent on improving Customer Service?" Of interest were the varied responses. The specific responses are illustrated in Figure 18, below.

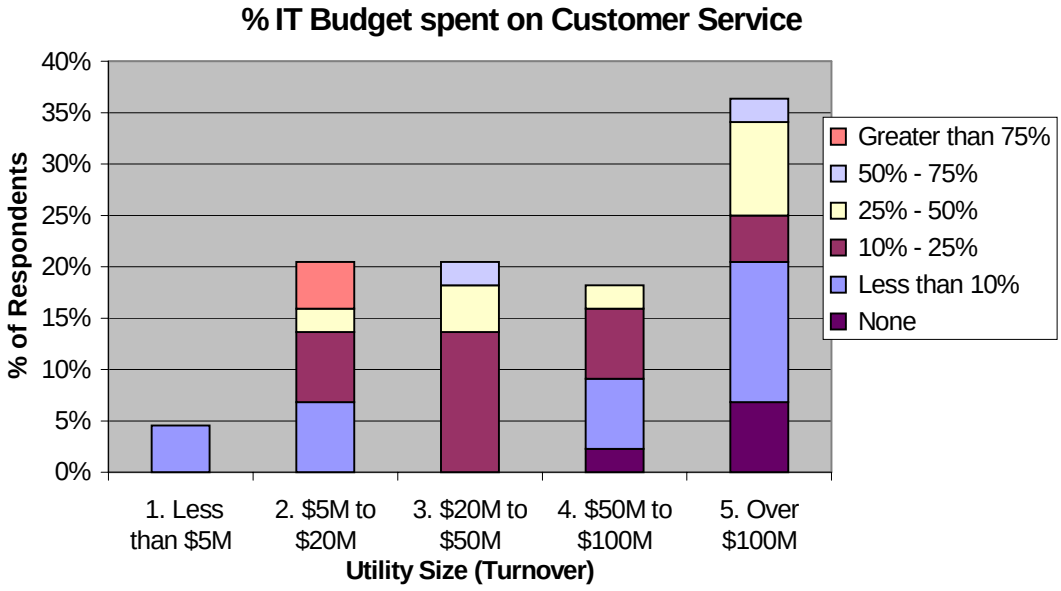

Figure 18: Percentage of IT Budget Spent on Customer Service

41% of the organisations who responded to the survey spend less than10% of their IT budget of improving Customer Service. When asked if improving customer service was included as part of the criteria when implementing Y2K solutions 40% of the respondents responded affirmatively. Refer Figure 19, below.

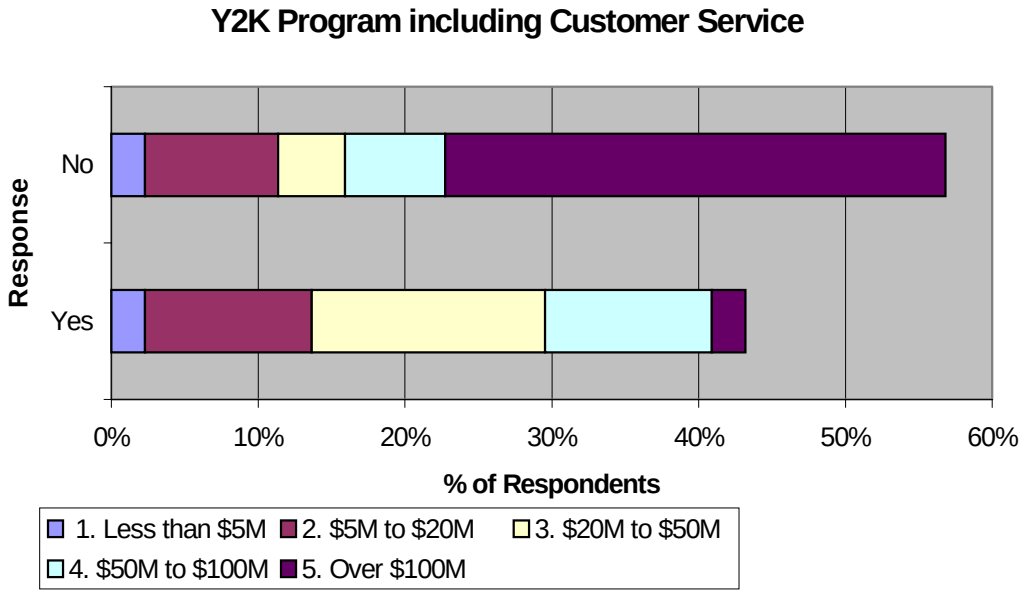

Figure 19: Y2K Program Including Customer Service

5. Benefits

Over 80% of the organisations that responded to the survey stated that they have realised quantifiable benefits from IT systems implemented in the last 12 months. (Figure 20)

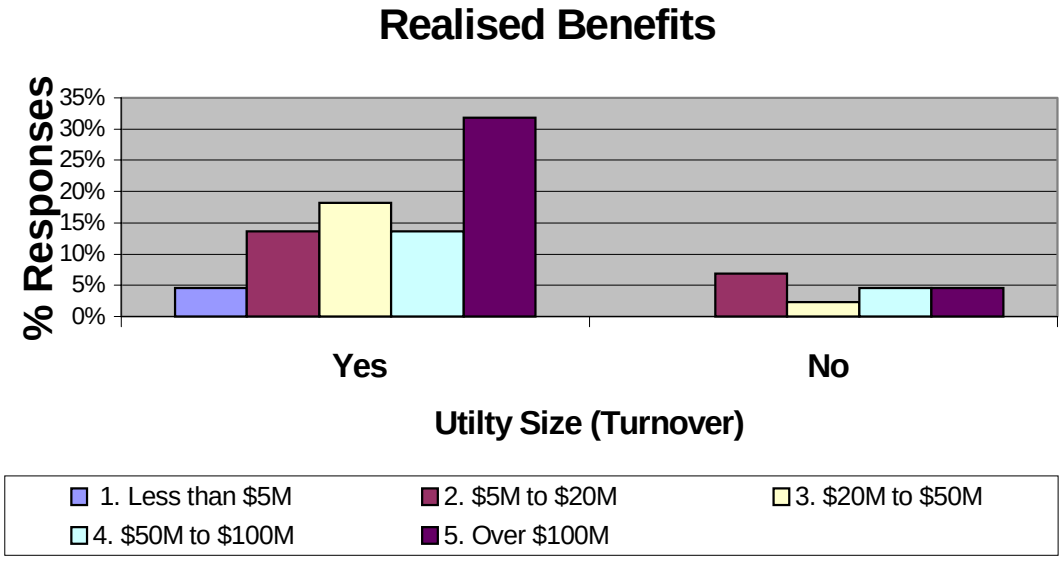

Figure 20: Realised Benefits from IT Systems implemented in the last 12 months

The areas where a benefit was expected are illustrated in Figure 21, below. The top ten ranked areas where most benefits were expected were:

- Financial Management (22)
- Productivity improvements (20)
- Customer Service/Billing (19
- Faster debt recovery (15)
- IT Costs reduction (13)
- Maintenance (13)
- Inventory (9)
- Order management/Cycle time (8)
- Procurement (8)
- Quality management (6)

The number in brackets is the number of organisations who reported this as an expected benefit area.

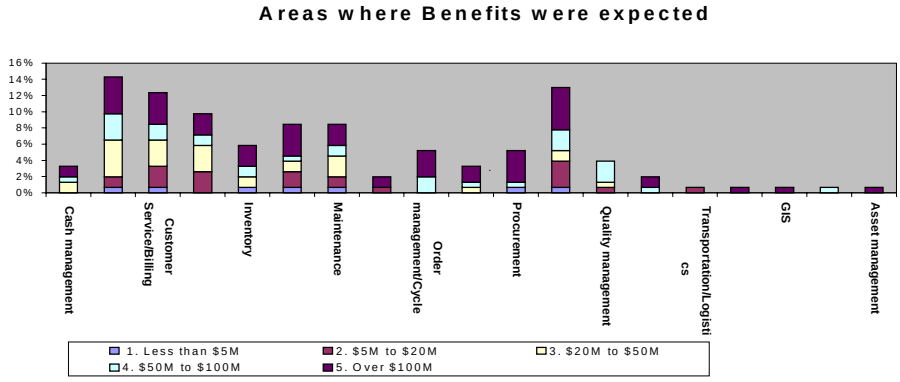

Figure 21: Areas Where Benefits Were Expected

The top 10 areas where benefits were realised were:

- Financial Management (18)
- Productivity improvements (18)
- Customer Service/Billing (14)
- Faster debt recovery (10)
- IT Costs reduction (9)
- Maintenance (8)
- Inventory (7)
- Quality management (6)
- Procurement (5)

- Cash management (4)
- Order management/Cycle time (3)
- Personnel reductions (3)

The number in brackets is the number of organisations who reported this as a realised benefit area.

The realised benefits are also illustrated in Figure 22, below.

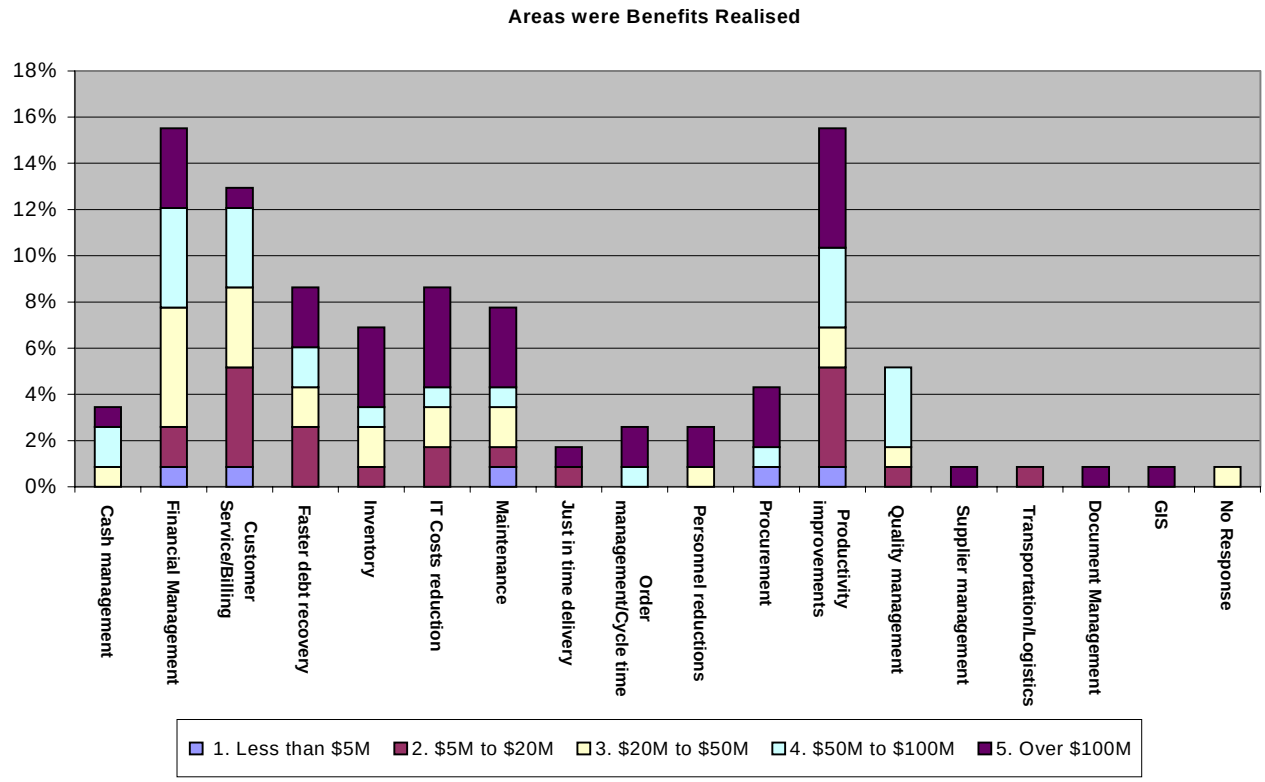

Figure 22: Areas Where Benefits were realised

Comparing the expected against actual is illustrated in Figure 23, below. As can be seen the level of the expected benefit was not met in a number of areas.

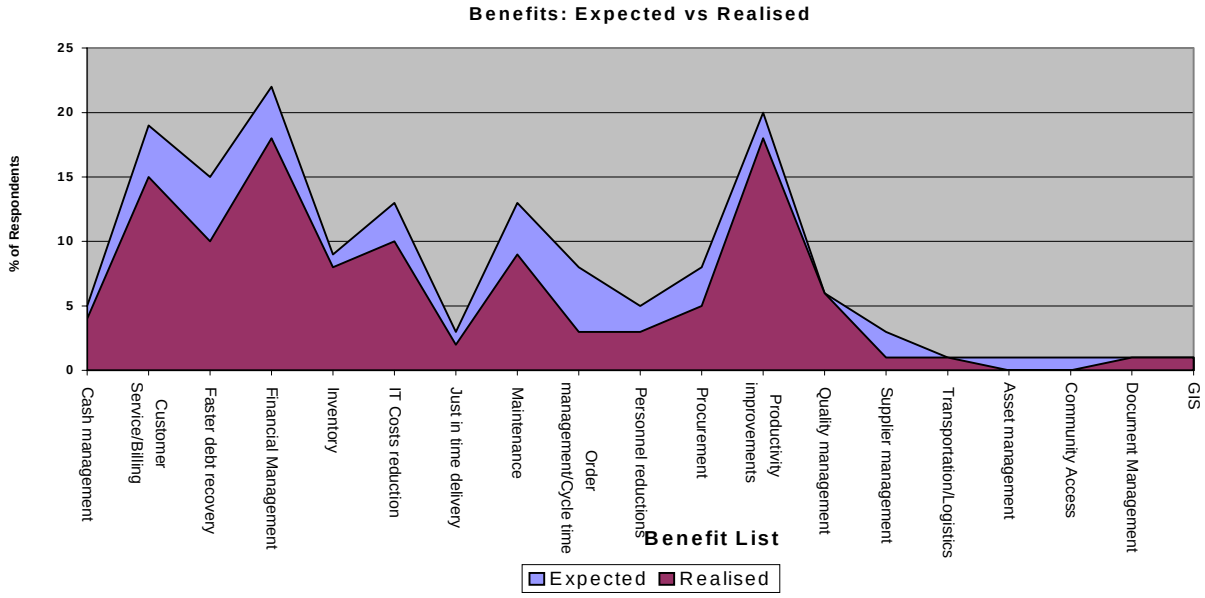

Figure 23:Comparison of Benefits expected against those Realised

Analysing the expected versus realised benefits more closely it becomes evident that it not possible to determine specific causes. But if one takes a more holistic approach some conclusions can be drawn. Figure 24 and Figure 25, below, represent this.

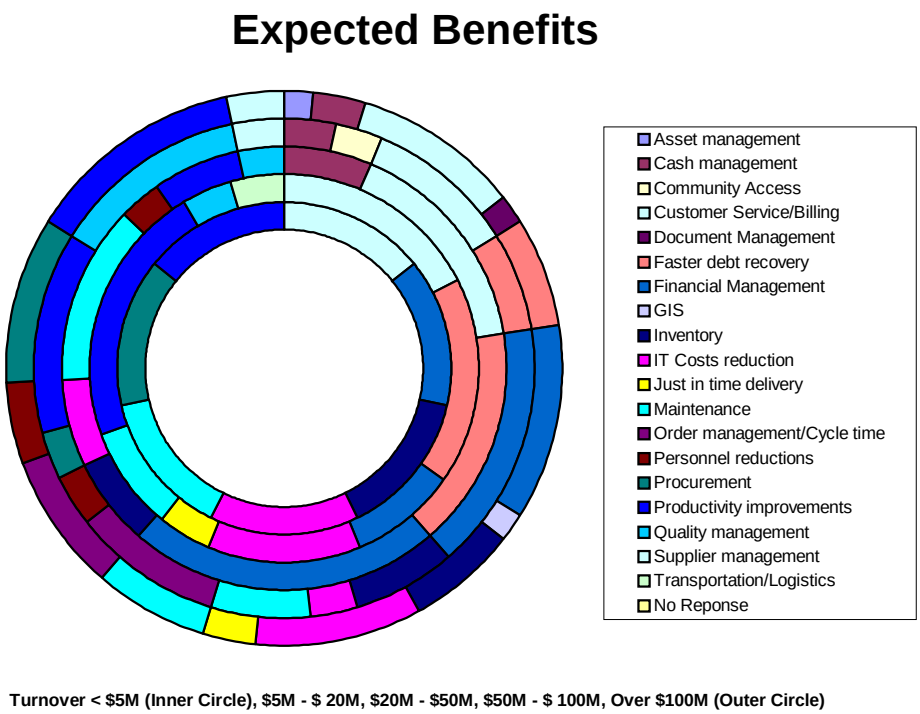

Figure 24:Doughnut Graph showing expected benefits by turnover (Inner circle Under $5M, Out Over $100M)

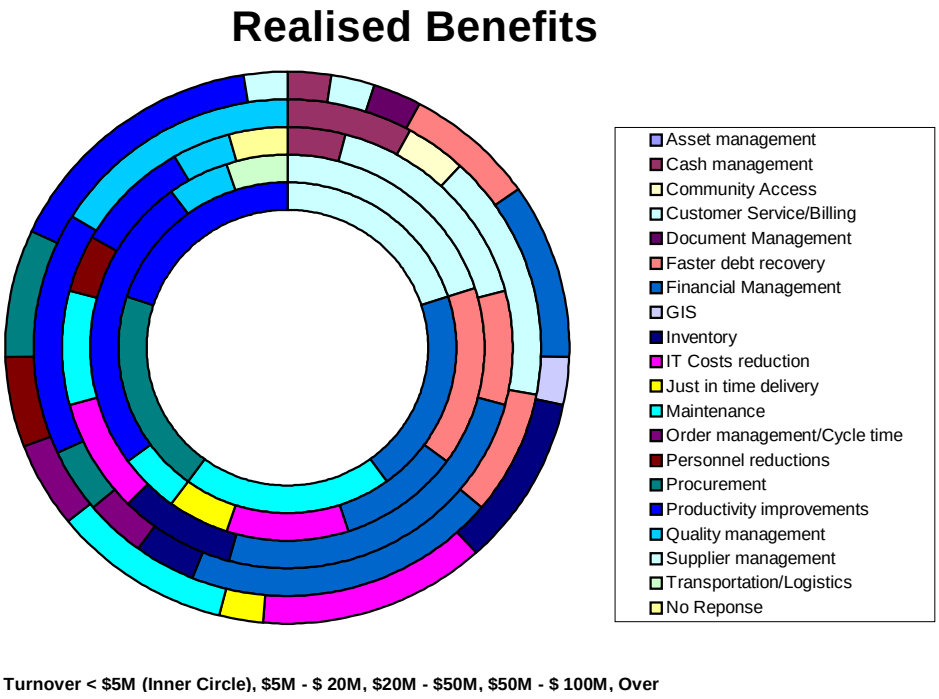

Figure 25: Doughnut Graph showing Realised benefits by Turnover (Inner circle Under $5M, Out Over $100M)

The areas where benefits were expected and not fully realised were:

- Customer Service/Billing
- Faster debt recovery
- Maintenance
- Order management/Cycle time
- Financial Management
- IT Costs reduction
- Procurement
- Inventory
- Personnel reductions
- Productivity improvements
- Supplier management

To take each benefit area individually and analyse the best approach would take far more time than allocated to this research project.

The fundamental theme, in the majority of cases, is direct or indirect cost reductions are important benefits to achieve from the introduction of computer systems. The trick is to extend cost reduction benefits to include a wider definition of the business value that IT can generate.

6. Findings

These findings are a summary of the report. The primary findings are an attempt to try and relate some observations made in this report with the recently published Gartner's CIO's Top 10 Management Issues for 1999. (Cited in Prodromou, 1999 p. 26) in Table 1, page 2.

The secondary findings are the remainder of the findings from this report. They are by no means less significant than the primary findings. They just cannot be directly related to the Gartner Top 10 CIO issues for 1999.

6.1 Primary

- The role of the CIO is not prevalent in the utility industry. IT management is not considered to be of such importance to have a senior role in the organisation and this appears to go against national trends. (Refer Section 0)
- Most recent IT changes have occurred to meet Year 2000 (Y2K) compliance. All Utility organisations have either completed their Y2K projects or were winding them up. They are confident that their Y2K programs will be successful. Most organisations spent more on replacing affected IT items (software and hardware) rather than repairing them.
- The process to manage the IT asset is not effective. A more IT specific process is required, 60% of the organisations claim they matched their current IT spending portfolio with business mission needs, priorities, strategic direction, or major process re-engineering, but did not manage or follow up on the process.
- 70% of the organisations surveyed did not have procedures for tracking costs and benefits attributable to IT. This percentage appears very high and is consistent across all organisations in the utility sector. When asked if senior management are informed of differences between estimates and actual's, 65% of the organisations said yes, they do, with another 25 % responding sometimes. That represents 90% of the organisations that responded to the survey. Strange isn't it! How can you advise management of changes when you have no formal procedures
- There was no significant increase in the 1999/2000 IT budget's but most organisations have reported increases in next year's budget (Refer Section 2.3).
- Over 80% of the organisations that responded to the survey stated that they have realised quantifiable benefits from IT systems implemented in the last 12 months. The areas where benefits were expected and not fully realised were:
    - Customer Service/Billing
    - Faster debt recovery
    - Maintenance
    - Order management/Cycle time
    - Financial Management

  - IT Costs reduction
  - Procurement
  - Inventory
  - Personnel reductions
  - Productivity improvements
  - Supplier management

- The methods used by the organisations surveyed for measuring IT investment were predominantly the traditional type. The most popular method of review is ad hoc.
- 93% of utilities use external service providers, although only two organisations, with a turnover over $100M, had all of their IT services completely outsourced. These $100M turnover organisations also use performance-based payments. 34% of external services are provided by companies that are either Multinational or are registered in Australia but have an overseas parent. Performance based payment agreements are mainly entered into by Australian owned organisations.
- IT is seen as a competitive "tool" in most industries, but this does not appear to be the case in the Australian Utility Industry with 72% reporting that they spend less than 10% of their IT budgets on Competitive Advantage.
- The majority of organisations do not stop or suspended IT Projects if expected key deliverable's are either not going to be achieved or if costs are exceeded. The main reason is that in the majority of cases, over 50%, don't have any published guidelines for the data to be collected. If you don't know what and how much the benefits or costs are going to be how can you know that you not getting them. Don't record it, can't track it!
- Consistent level of involvement for reviewing IT benefits appears to be only from Executive Management. Operational Management and IT management disappear once formal processes are put in place.

6.2 Secondary

- In a recent article by Mason & David (1999) more than half of IT managers surveyed in a straw poll were yet to determine the impacts of the GST on their infrastructure purchasing budgets. This was confirmed in the survey with over 50% of the organisations reporting they had not considered the GST as part of their 2000 IT Budget. The impact of the GST does not appear to have been fully considered by most IT organisation in the Australia Utility Industry. Almost 50% of the organisations have considered the impact of the GST on their IT program while 30% of these attempted to address the GST during their Y2K program.
- 41% of the organisations who responded to the survey spend less than10% of their IT budget of improving Customer Service.
- Organisations pay nearly 50% of their services as fixed price or performance based but only 25% of those organisations have totally autonomy. Most

organisations see some form of involvement by their suppliers in their IT business, be it as an information provider or as a partner but external organisations are not permitted to represent their partnership organisation.

- Formal Post Implementation Reviews (PIR) appear to occur in less than 30% of the organisations surveyed. Of those organisations that conduct post implementation reviews, all 12 organisations explain the PIR process and communicate the results. Of the 10 organisations that "sometimes" conduct PIR's two do not explain the process. Willcocks (1996) states that when Post Implementation Reviews are conducted, the most common practice is for users to take responsibility for benefits, and for the IT department to take responsibility for the costs. Subsequently, system development costs are rigorously monitored and controlled but not the benefits
- Manhour's to be used, Function points, Customer Service Improvements and Links to Business Objectives are metrics that are less likely to be used as a type of supporting data to be provided for IT investment proposals (less than 5 %).

7. Conclusion

Willcocks (1996) and Berger (1992) both speak of the need for business and IT to be partners for any business to improve. This partnership is a strange one. It is full of conflicts and contradictions.

Some managers would agree that IT has penetrated their businesses but find it hard to justify any further expense!

Some businesses have had IT become such an integral part of the business that it was fundamental to the way everyday business activities were conducted.

Business use IT for competitive reasons and therefore to either stay ahead or just to compete with the competition the business could simply not afford NOT to invest.

With IT being such an integrated part of business, Management finds or is finding it increasingly difficult to separate technology savings and IT benefits from normal business benefits.

The fundamental problem is that management in business does not see IT as a Capital Asset. Typically software is only seen as an expense or overhead. Failure to appreciate the size of this investment leads to IS/IT being under managed, a lack of serious attention to IS evaluation and control, and also a lack of concern for discovering ways of utilising this IT asset base to its full potential. The IT department take responsibility for the costs but do not controll the benefits.

If you look at who is the “management” they are typically accountants or engineers. These two disciplines deal with numbers or values. To communicate effectively and to understand the problem a value measurement system is essential. But how?

Financial reports usually reduce performance to a single number, such as return on assets or gross profit. Human resource reports present such numbers as employee turnover or hours lost per month from accidents. IT reporting should be simple and numeric.

Glen Peters (1996) summarised the IT management issues affecting business today. He looked at what made a good company. He found that the Companies that succeeded had positive attitudes and had the following qualities.

- Had Steering committees (or project boards)
- Members followed project from start to post implementation
- Members were accountable or took responsibility for benefits
- All benefits were measurable variables
- Not necessarily costs term's eg.. sales calls per day
- Steering committees regularly reviewed for benefits
- concentrated on finding benefits missed in original study

All of the Projects have to have clearly defined responsibilities and criteria that was measurable.

Peters (1996) stated that where specific criteria was used the project typically *over performed* their original criteria.

All of these projects had four basic qualities. They are:

1. That evaluation criteria has to be measurable (or quantifiable)
2. It should be clearly stated at the beginning of the project and continually reviewed during the lifecycle.
3. Many different criteria should be used.
4. Formal methods should be used. These may be traditional or modern, but they must be consistent across the whole organisation (e. Kodak and Federal Express)

Management issues in IT are no different to any other business. They require the involvement and backing of senior management in all aspects of a project, not simply the initial stages.

Management involves the review of the process and the inspection of the final product. IT unlike most products requires a discipline to formulate various metrics to measure its success or failure.

In Berger's (1992) article "Critical Issues in IS" (Information Systems), he states that:

> *"Businesses are refocussing on bottom-line costs, customers and quality to increase financial performance and better compete. Competitive advantage always has been and always will be the Holy Grail of business.*
>
> *Tighter, flatter organisations, calling for greater accountability, are having a greater impact on IS as they push to downsize, outsource and consolidate capital-intensive mainframe systems.*
>
> *Keeping up with technology alone is a full-time job. He goes further in the article by stating that management responsibility is no longer measured by the amount of budget and people one directly controls, but it is measured by the impact one plays in creating competitive advantage from the use of IT delivering solutions in a reasonable time frame and managing the cost of doing so. It is measured by the effective management of the outsourcing and downsizing teams.*

This places extreme pressure on the IT department, it's staff and management.

Cutting costs while still delivering value is one of the greatest challenges facing any business let alone an information systems / technology business. But what misses out or gets put off to next year?

Berger (1992) points out that IS technological challenges are also becoming more complex. Control and ease of use conflict. This is seen in the emerging technologies such as distributed environments and e-commerce. Keeping up with technology alone is a full-time job without having to manage the business as well.

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